

REMARKS

Claims 1-9 and 11-17 were pending and have been rejected.

Claims 1, 6, 7, 11, 12 and 14 are amended.

Claims 10 and 17 are cancelled.

Claims 18-19 are new.

Claims 1-9 and 11-17 are pending.

Claims 1-9 and 11-19 are now pending.

Amended Claims 1, 6, 7, 11, 12, and 14

Claim 1 is amended to require that the copolymer formed in the water phase is essentially 100 wt. % components a), b) and c). Further component c) is now also required.

Claims 6, 7, 11, 12 and 14 are amended to make consistent with claim 1 and to provide minor clarification.

New claims 18 and 19 are supported by the examples A and B on pages 30 and 31.

No new matter is added.

35 USC 112, second paragraph

Claims 1 and 14 are rejected under 35 USC 112, second paragraph as being indefinite. Applicants have followed the examiner's suggestions and deleted the proviso.

35 USC 102(b)

Claims 1, 5-7, 13-14 and 17 are rejected under 35 USC 102(b) as being anticipated by Cockcroft, WO 02/40622.

Claims 1, 5-7, 11, 13-14 and 16-17 are rejected under 35 USC 102(b) as being anticipated by Galleguillos et al., US 6,361,768.

Applicants have amended claim 1 to require component c). As there is no teaching within Cockcroft to crosslink, Applicants believe the rejection is overcome.

Claims 1, 5-7, 11, 13-14 and 16-17 are rejected under 35 USC 102(b) as being anticipated by Galleguillos et al. , US 6,361,768.

Galleguillos absolutely requires the presence of an anionic monomer. Claim 1 as amended excludes the presence of an anionic monomer. Galleguillos is directed to ampholytic polymers and requires at least 0.05 to 20 mole percent of at least one anionic monomer having at least one carboxy-functional group. See col. 1, lines 1-12 and col. 4, lines 38-40.

The presently claimed polymer is cationic and excludes formation from any monomers and crosslinkers not embodied by components a), b) and c). Carboxy functionalized monomers are not encompassed by the present claims. Accordingly, Applicants believe the anticipation rejection is overcome as there is no overlap between Galleguillos and the present claim limitations.

35 USC 103(a)

Claims 1-9 and 11-17 are rejected under 35 USC 103(a) as being unpatentable over Galleguillos, Us 6,361,768.

As explained above there is no overlap between Galleguillos and the presently claimed invention. Thus this rejection is also overcome.

Claims 1-3, 5-7, 11-14 and 17 are rejected under 35 USC 103(a) as being unpatentable over Cockcroft, WO 02/40622.

The above rejection does not include claims 4 and 15 because Cockcroft does not teach the use of crosslinking agents. As the present claims now require a c) component, this rejection is also overcome.

Claims 1-9 and 11-17 are rejected under 35 USC 103(a) as being unpatentable over Green, US 6,365,656 in view of Galleguillos, US 6,361,768 in view of Lentini, US 5,665,368.

Green discloses liquid dispersions containing polymers dispersed in a di or triglyceride oil which are useful in personal care compositions including hair care products. The polymer may be cationic or

anionic. Green teaches cationic monomers encompassed by formula (I) and nonionic monomers such as acrylamide and methacrylamide.

Green is silent as to the use of disubstituted acrylamides. Further, the examples of Green are all directed to anionic liquid dispersions.

Examiner relies on Galleguillos for the teaching that it is well known to include nonionic monomers such as N,N-dimethyl acrylamide that meets the limitations of Applicant's claimed nonionic monomer of formula (II). Examiner asserts that this would be especially obvious since Green and Galleguillos describe their use as non-ionic monomer components in ionic copolymers useful as thickeners in cosmetic formulations.

Applicants disagree with this analysis.

While Green and Galleguillos do teach ionic polymers as thickeners in cosmetic formulations, Green exemplifies only anionic polymers. Galleguillos teaches the necessity of incorporation of at least some amount of carboxyl containing monomers. Thus one skilled in the art would need to take the teachings of Green to form cationic polymers when Green exemplifies only anionic polymers and to pluck from Galleguillos the teachings of dialkyl substituted acrylamide while ignoring other essential teachings of Galleguillos, that is the incorporation of at least some amount of anionic monomer. Obviousness requires more than simply the presence of missing elements from various references to match the present claim limitations.

Furthermore, the replacement of acrylamide as taught in Green with the dimethylacrylamide as taught in Galleguillos, is not simply a replacement of one equivalent for another.

Acrylamide is widely regulated and even very small amounts are highly discouraged especially in cosmetics or those products which come in contact with skin. In the case of the standard adopted in China and the European Union, the maximum limit is set at 0.1 ppm (0.1 mg/kg) of residual acrylamide for leave-on cosmetics (for body-care products in the case of EU).

The US Cosmetic Ingredient Review (CIR) Expert Panel suggests a cosmetic ingredient as long as the residual acrylamide content is below 5 ppm (5 mg/kg).

Both regulations are highly stringent. The replacement of acrylamide altogether with a dialkylacrylamide overcomes the problem entirely. Acrylamide and N,N-dimethylacrylamide are formed by distinctly different methods. The preparation of N,N-dimethylacrylamide does not give rise to residuals of acrylamide. Thus there is no residual acrylamide in polymers formed from a cationic monomer of formula (I) and a monomer for formula (II), wherein R8 and R9 are C1-C4-alkyl. This is an important advantage in any composition used for personal care products and one not recognized by either Green or Gulleguillos.

Furthermore, Applicants submit a Declaration which shows unobvious advantages signed by the first inventor, Eleanor Bernice Ridley.

Two polymers were compared in the Declaration- Polymer 1 a acrylamide/ethyltrimonium chloride methacrylate (20:80) and Polymer 2 dimethylacrylamide/ethyltrimonium chloride methacrylate (20:80).

Polymer 1 is a polymer of the closest prior art and Polymer 2 is a a polymer encompassed by the presently claimed method.

Microfluorescence studies were carried out to determine the deposition of the two cationic polymers on various sections of the hair fiber (root, middle and tip).

The data in Figure 1 shows an average in fluorescent intensity of 22.97 units on the treated hair tip with polymer 1 while Figure 2 shows an average in fluorescent intensity of 35.83 units on the treated hair tip with polymer 2 (according to the invention).

A higher level of conditioning is desired to effect temporary repair to the most damaged tip. Polymer 2 succeeds in accomplishing this. This "focused conditioning" is an important advantage.

Both polymers are identical except that one contains acrylamide and the other contains dimethylacrylamide. The replacement of dimethylacrylamide accordingly provides an advantage that was not foreseen by the prior art and leads one skilled in the art to judge that dimethylacrylamide is in fact not an equivalent for acrylamide but instead gives "focused conditioning effects" at the hair tip where conditioning is most likely to be needed.

Accordingly, the Applicants believe the above 103 (a) rejection is overcome at least in light of:

- The advantages noted in the replacement of acrylamide with dialkylacrylamide in regard to no possibility of residual acrylamide when dimethylacrylamide is used as a replacement monomer.
- The unobvious advantage shown in the Declaration of "focused conditioning" when dimethylacrylamide replaces acrylamide in the formed polymer. Should the Examiner opine that the showing is not commensurate in scope to the claims, the Applicants direct the Examiner to claims 2, 3 and new claims 18 and 19.
- The Examiner believes the replacement of acrylamide with dimethylacrylamide might be obvious to try. But Applicants submit that it is not obvious to vary all parameters or try each of numerous possible choices where the prior art gives no direction as to which of many possible choices is likely to be successful. In fact, Green prefers anionic polymers. Galleguillos absolutely requires some carboxylic functionality in his copolymer. These preferred and required directions would have had to have been ignored and instead one skilled in the art would need to look to the cationic polymers taught in Green and selection from one of many non-ionics suggested in Galleguillos while ignoring other absolute requirements of the Galleguillos invention (incorporation of carboxylic acid moieties within the formed copolymer).

Reconsideration and withdrawal of the rejection of claims 1-9 and 11-16 is respectfully solicited in light of the remarks and amendments *supra*.

Since there are no other grounds of objection or rejection, passage of this application to issue with claims 1-9 and 11-17 is earnestly solicited.

Applicants submit that the present application is in condition for allowance. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

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Enclosure: Declaration under 1.132

